Creating international and interdisciplinary collaboration for health

AONM Newsletter November 2020

With us all locked in a world we could never have imagined a year ago, the Academy of Nutritional Medicine hopes to add some inspiration with a number of news items from both near and far. We are very sad to be unable to hold AONM's Annual Conference that has always traditionally been in November. One of the speakers who was going to come over, Dr. Craig Shimasaki from the USA, will now be giving his talk online instead, on the links between Lyme Disease and autoimmune encephalopathy (a preferred term for PANS/PANDAS, as the term "paediatric" in those acronyms is so misleading – adults can of course suffer from them, too). The renowned Dr. Sam Yanuck will be presenting mechanisms and treatments for that condition in the same series, so these unique webinars will hopefully make up for missing out on our in-person conference. Chris Woollams will also be answering your questions as a follow-up from his hugely popular talk on the benefits of complementary and integrative medicine.

Please do catch up on the webinars we have been holding all year if you have not yet seen them, as we have been honoured to have had such extremely informative and prominent guest speakers: https://aonm.org/view-past-webinars/

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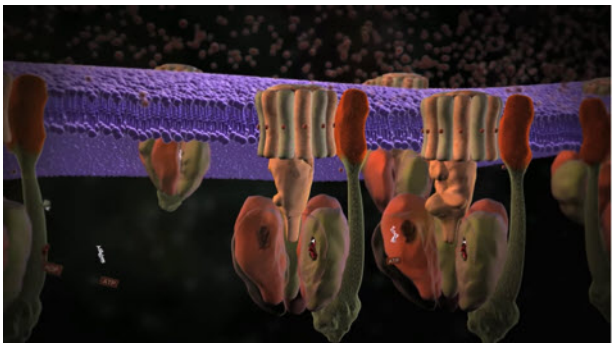
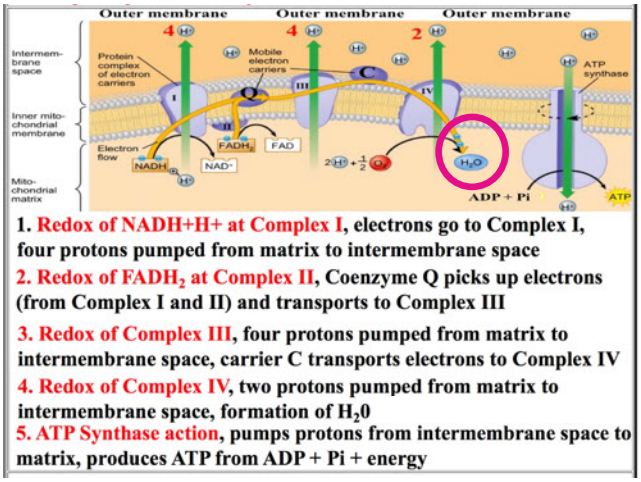
1. Discovering our inner Internet

The dominant narrative over the last months has focused on the assumption that we are incapable of handling health threats without external assistance. It may be worth revisiting the incredible intricacy of our cellular processes taking place every nanosecond of our lives. This video brings home the miracle of cellular functions in every living organism – "Molecular Machines: ATP Synthase" (https://www.youtube.com/watch?v=XI8m6o0gXDY, 3 mins), as a prelude to this subject.



Screenshot:https://www.youtube.com/watch?v=XI8m6o0gXDY*; we have nanomotors called "ATP Synthase" in our cells of such precision that it has been impossible to replicate them – one billion mitochondria would fit on the head of a pin, and within each one, there are thousands of electron transport chains, each containing five complexes, of which this "piston" is the fifth.*

It is astonishing that barely a word is generally lost on the production of water as a byproduct of generating adenosine triphosphate (ATP, our cells' energy currency) in our mitochondria. Oxygen is the terminal electron acceptor at the fourth complex of the electron transfer chain, and water is created as a result. All emphasis is given, when describing this process, to the protons (H+) that drop down into ATP synthase to generate ATP. But what about that mysterious H_2O that is formed? Considering we have so many mitochondria in our cells, how much water is actually being formed, and what is happening to it?



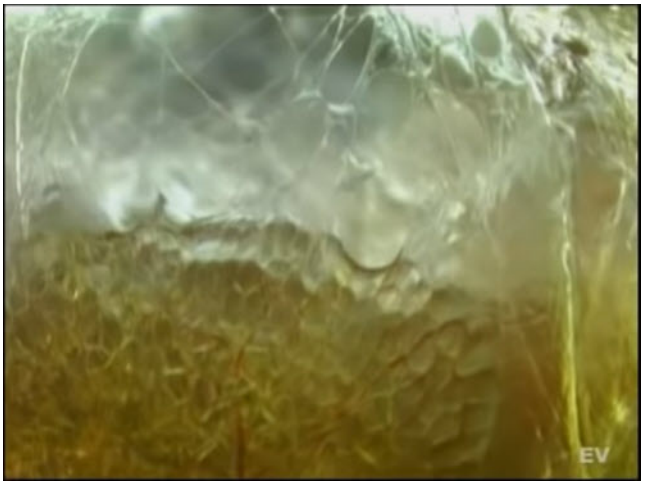
Source:
https://www.unm.edu/~lkravitz/Exercise%20Phys/ETCstory.html

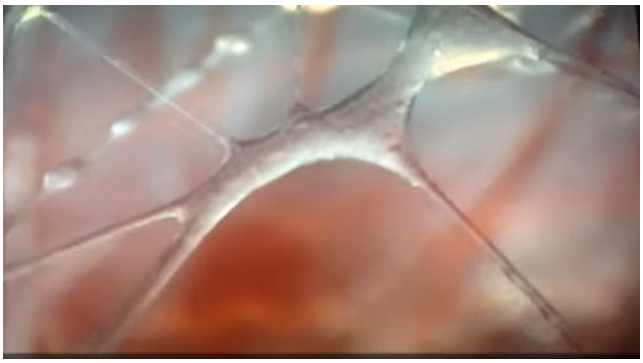
Dr. Laszlo Boros and Gábor Somlyai at the 4th International Congress on Deuterium Depletion in October 2019 revealed a study they have been working on which shows that we make, on average, some 7,200 litres of metabolic water a day, that is: 1,902 gallons (1). This metabolic water is constantly recycled by the Krebs cycle (which is also in the mitochondria), and is used for harvesting the protons that are needed for ATP production. What an extraordinary volume: equivalent in fact to the amount of water the human heart circulates a day(2).

We also produce 800 litres of primary filtrate that we want our kidneys to reabsorb into our bloodstream(3)(4). If we drink too much exogenous water, we may find we lose the benefit of the metabolic water constantly being generated in our cells. Excess exogenous water may suppress our antidiuretic hormone, which can in turn inhibit gonadotrophic-releasing hormone, required to release all our other steroid hormones(4). So hormone imbalance could potentially have its roots in the balance between our endogenous and exogenous "water table". Drinking large amounts of water – 4 or 5 litres for example – may be shutting down our own metabolic water production(5).

Even more important perhaps however is what happens if your mitochondria are no longer working optimally. This means this entire mechanism of metabolic water production in the mitochondria will be compromised. If the mitochondria have downregulated (protectively, as they may to e.g. counter pathogens such as viruses or bacteria) or become blocked/dysfunctional, this water will not be produced – or at least not as much of it.

This article of Boros'/Somlyai's was only completed end of last year, so it is early days yet. But the work of Professor Gerald Pollack on The Fourth Phase of Water suggests that water (in the special "gel" phase he has discovered, that he calls "exclusion zone water") forms a layer across the surface of every surface in our body. This would include the mitochondria – on every layer, crevice, protein and substrate in them. Professor Pollack's team and other have found that this exclusion zone (EZ) water is activated by light of certain frequencies (as well as much else). Near red and infrared light for example, laser light – and of course sunlight itself – clearly increase it, driving flow/metabolism. It was found by the surgeon Dr Jean Claude Guimberteau that this gel-like water is formed along all our fascia: connective tissue that surrounds and holds every organ, blood vessel, bone, nerve fibre and muscle in place. He found that this gel-like water is a hidden irrigation as well as electrical system, conducted by water, sending cell-to-cell communication instantly (immortalised in his film "Strolling under the skin"(6)).





Fascia filmed by the surgeon Dr Jean Claude Guimberteau

Could this mysterious water generation taking place every nanosecond in our mitochondria actually be far more essential to life than we could have imagined? "What the new science has alerted us to is that water full of electrolytes is also full of electrons that run our electrical function. The quality of our hydration has everything to do with the quality of electrical conduction."(7) Is this is our "inner Internet"?(8) Dr. Laszlo Boros says at one point in his stunning lecture "Life is nothing but producing and breaking down water".

AONM will be holding a series of talks on the mitochondria in early 2021 where the clinical applications of this and further topics will be explored in greater detail.

References

1. https://www.youtube.com/watch?v=0g8OLChXta8
2. Ibid
3. Ibid
4. https://www.drchristineschaffner.com/dr-petra-dorfsman/
5. Ibid
6. https://www.youtube.com/watch?v=ky0BmGP5nbU
7. "Quench", by Dana Cohen and Gina Bria
8. https://hydrationfoundation.org/guide-on-how-to-be-hydrated-move-your-water/

2. SARS-CoV-2 – why immunity is about more than antibodies

So far we have only really heard of PCR and antibody testing for SARS-CoV-2. But the immune response to SARS-CoV-2 involves both

A world first: the CoV-iSpot

Test of innate immunity now available at Arminlabs

Substantiated by the findings outlined above, Dr. Schwarzbach has now introduced a test of T cell immunity using the other arm of the immune system, innate immunity rather than serology (the antibody arm). This is the first test of its kind, and is called the "CoV-iSpot".

The IGRA (Interferon γ) marker uses enzyme-linked immunospot technology (ELISpot) specific to SARS-CoV-2 as well as Corona viruses in general. INF gamma is an effector cell, and if the test evidences a positive reaction to SARS-CoV-2, this suggests an active immune reaction: the cells are signalling exposure. The detection of reactive T-cells (effector cells) against a pathogen indicates contact and thus an acute or past infection, regardless of whether antibodies have been produced. If the result shows a positive reaction to Corona viruses in general ("Pan Corona"), this a) distinguishes the signal from SARS-CoV-2, if that is negative, and b) suggests exposure to a different kind of Corona virus, such as those that naturally occur in some types of Rhinovirus.

The second metric used in the test, Interleukin 2 (IL2), is a memory cell. If IL2 in the form of SARS-CoV-2 is present, this indicates past SARS-CoV-2 infection and is more likely to suggest immunity, though for how long is not yet definitely proven. Some articles referenced above indicate that memory T cells for SARS-CoV-2 could confer longer immunity than antibodies. If IL2 in the form of "Pan Corona" is present, i.e., this memory T cell has been detected to Corona viruses in general, but excluding the novel SARS-CoV-2, then this may still confer immunity as described in some of the articles referenced above.

Many people destroy the Coronaviruses through their cellular immune system before antibodies are produced, so identifying SARS-CoV-2-specific T-effector or memory cells may in many cases be a more effective way of detecting previous infections of this pathogen than antibody testing.

cell-mediated (innate) immunity and antibody production.(1) An April 2020 study in Nature Reviews Immunology states that SARS-CoV-specific CD4+ T cells express IFNγ, TNF and IL-2, "which suggests that patients with SARS-CoV infection exhibit a T_H1 cell response and mainly use cellular immunity to control the infection".(2) The use of "mainly" in that report is extraordinary, as this characteristic of the infection has not been highlighted – at least to the public – around the world. What can the cellular immune response tell us about the infection, and how might this differ from the antibody response?

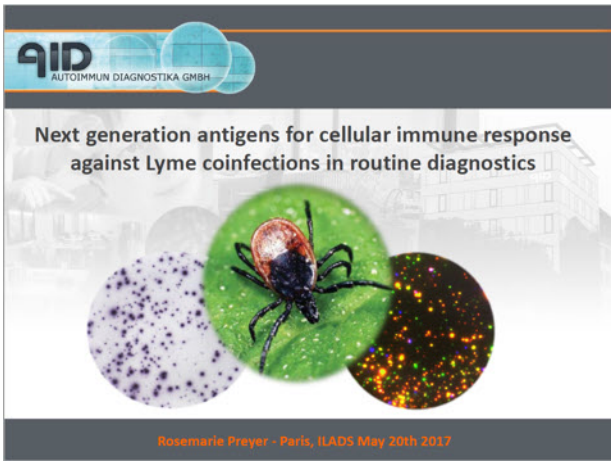
A July 2020 article in Nature stated that SARS-CoV-2-specific T cells – cells involved in the innate immune response, initially, rather than an antibody response – had started to be characterised for patients with COVID-19, and that a potentially protective role had been inferred from studies of patients who recovered from SARS and MERS.(3) Two studies from May 2020 revealed that subjects who have been infected with SARS CoV-2 harbour T cells that target the virus, and that this may help them recover.(4) This is no surprise, really, as that is the purpose of the innate immune response, to provide a first line of defence, but interestingly both studies also found that some individuals never infected with SARS-CoV-2 have these cellular defences, most likely because they were previously infected with other coronaviruses.(4) A Science article reported on those studies with the message: "T cells found in COVID-19 patients 'bode well' for long-term immunity".(5)

The finding that patients who recovered from COVID-19 and SARS can mount T cell responses against shared viral determinants suggests that previous SARS-CoV infection can induce T cells that are able to cross-react against SARS-CoV-2. "These findings demonstrate that virus-specific T cells induced by infection with betacoronaviruses are long-lasting, supporting the notion that patients with COVID-19 will develop long-term T cell immunity. Our findings also raise the possibility that long-lasting T cells generated after infection with related viruses may be able to protect against, or modify the pathology caused by, infection with SARS-CoV-2."(6)

SARS-CoV-2-specific T cells were found in most of the convalescent patients in a study published on October 19th 2020 entitled "What is the role of T cells in COVID-19 infection? Why immunity is about more than antibodies", which is a promising sign that infection may give rise to immunity.(7) UK research has just been published (November 2nd 2020) conducted by the University of Birmingham, Public Health England and NIHR Manchester Clinical Research Facility in a large-scale study (cohort of over 2,000) demonstrating robust cellular immunity to SARS-CoV-2 virus peptides at six months in non-hospitalised individuals.(8) SARS-CoV-2-specific memory T cells have also been found in exposed seronegative healthy individuals (relatives of confirmed cases), which may indicate asymptomatic infection. One study has shown that ~93% of "exposed asymptomatic" individuals had a T cell response to SARS-CoV-2, despite seropositivity in only 60% of cases.(9) Asymptomatic infections may therefore be more common, and antibody testing alone may underestimate the true prevalence of the infection or population immunity. Is it possible that testing the innate immune system may give us a truer perspective on immunity? Further studies are certainly necessary in an infection as apparently new as this, but the innate immune system's reaction to it would certainly appear to be an additional component to a complete picture of both likely past exposure and future protection.

1.https://www.ecdc.europa.eu/en/covid-19/latest-evidence/immune-responses
2.https://www.nature.com/articles/s41577-020-0311-8
3.https://www.nature.com/articles/s41586-020-2550-z
4.https://www.sciencemag.org/news/2020/05/t-cells-found-covid-19-patients-bode-well-long-term-immunity
5.https://www.sciencemag.org/news/2020/05/t-cells-found-covid-19-patients-bode-well-long-term-immunity
6. https://www.nature.com/articles/s41586-020-2550-z
7.https://www.cebm.net/covid-19/what-is-the-role-of-t-cells-in-covid-19-infection-why-immunity-is-about-more-than-antibodies/
8.https://www.birmingham.ac.uk/university/colleges/mds/news/2020/11/covid-moss-cellular-immunity.aspx
9.https://www.medrxiv.org/content/10.1101/2020.08.11.20171843v2

3. A new Lyme test using the innate immune system: the Lyme iSpot



The **Lyme iSpot** provides information on the activity of a potential Borrelia burgdorferi infection. This

test can differentiate between active (specific effector cells) and latent (specific memory cells) infections. Due to the **EliSpot (Enzyme-linked immunosorbent spot assay)**, it is now possible to better evaluate infection, inflammation and autoimmune processes.

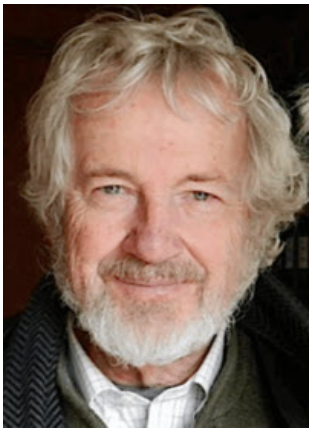
While the **EliSpot** is exclusively based on interferon γ production, the **Lyme iSpot** also determines the cytokine IL-2. The IFN gamma and IL2 cytokine responses are measured using a "stimulation index" (SI). If the IFN gamma iSpot is positive (SI of 2-3 is weak positive, >3 is positive), this indicates that the sample contains effector T cells that are reactive to B. burgdorferi, and the patient is most likely to have an active infection. This suggests the advisability of therapy with antimicrobial protocols. If the IL2 iSpot is positive (same SI reference ranges), this indicates the presence of Lyme-specific memory cells. This indicates immune memory to past infection, but is also considered a "latent" signal. The decision as to whether to treat should be taken considering a patient's symptoms. The value of the iSpot is that it gives you two different perspectives on the reaction of the patient's immune system.

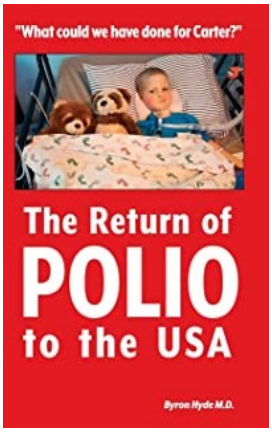
Both these new tests, the CoV-iSpot and the Lyme iSpot, are offered by Arminlabs. Please contact AONM for further information: Helpline 0333 121 0305.

4. New books: Dr. Jodie Dashore, Dr. Byron Hyde and Dr Sarah Myhill

Dr. Jodie Dashore, who runs Bionexus Health in the US and has spoken at AONM's annual conference twice – last year on "Biotoxin Illness From The Ground Up", https://aonm.org/wp-content/uploads/2019/11/Dashore-PDF.pdf – has now brought out the book she has been working on for the last 10 years, "The BioNexus Approach toBiotoxin Illness: A Step-by-step Guide to Sustainable, Plant-Based Treatment Options."

This fascinating book covers the biotoxin pathway and the affected systems in huge detail. It then describes how to prepare your approach, the different steps and special considerations. The book is supported by numerous charts and figures, and has invaluable recipes interspersed throughout. It will be available from Amazon as well as Dr. Dashore PhD's website https://bionexushealth.com/ very soon.

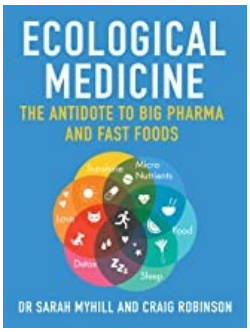




Dr. Byron Hyde, a doctor who has dedicated his practice to ME since 1984, and who gave two resounding talks on ME at the AONM annual conference in May 2019, has brought out a new book: "The Return of Polio to the USA". "Acute Flaccid Paralysis (AFP) is the name used by the (WHO) and by many countries. This is a descriptive pseudonym which only means Paralytic Poliomyelitis. It exposes the gross oversight of health authorities in the USA, especially the CDC (Centers for Disease Control in Atlanta), in not recognizing or responding adequately to the growing danger of the return of New Polio in our midst."

Dr Hyde points out the close relationship between what he terms the New Polio and Myalgic Encephalomyelitis (M.E.), which, he writes, have an enteroviral cause. "I have made a strong case in this book that Myalgic Encephalomyelitis, Paralytic Poliomyelitis, transverse paralysis, missed (abortive Polio) or Superior Polio are just variations of the same enteroviral disease process, with one variant more lethal and more visible than the other." (For further details, please see the AONM newsletter on this topic, article "How pernicious are enteroviruses?", https://aonm.org/wp-content/uploads/2019/02/AONM-Newsletter-February-2019.pdf)

Dr. Sarah Myhill's latest book is a beautifully clear roadmap through the field of Ecological Medicine. She begins by going through symptoms and mechanisms - whether energy delivery,



inflammation, toxicity or hormonal imbalance, and then, in Chapters 20 - 37, covers her therapeutic approach, ranging from "What to do - The Basics" to "The Bolt-on Extras". Both sections cross-reference her other works , such as "*Diagnosis and Treatment of Chronic Fatigue Syndrome and Myalgic Encephalitis 2nd Edition: It's Mitochondria, Not Hypochondria"*, and *"The Infection Game"*. Part VI is an extensive and fascinating section where she applies the foregoing across all branches of conventional medicine, whether gastroenterology, cardiology, dermatology or even psychiatry and dentisty. The Ecological Medicine approach is so different from conventional medicine as it digs down to the cause. Her cases studies in section VII are particularly eye-opening and inspiring. Chapter 79 illustrates her work with "management frames" in action - very practical, enlightening, and often transferable to one's own cases, as Dr. Myhill demonstrates how so much of chronic illness, at root, goes back to the same common denominators. Hundreds of pages of excellent material that is often counterintuitive until one has learned to shift one's perspective. Dr. Myhill is a core member of the British Society for Ecological Medicine (BSEM) and on the Advisory Committee of AONM, and frequently provides training for both

5. Upcoming online events

AONM

PANS/PANDAS webinar series

Wednesday November 18th, live at 7.00 pm
Professor Craig Shimasaki, CEO of Moleculera Labs, Oklahoma USA
"The Links between Lyme Disease and Autoimmune Encephalopathy"
Presentation and Q&A
Register at
https://us02web.zoom.us/webinar/register/WN_wZ6MvaP8TR6dmQ-ZCOl_qQ

Thursday December 3rd, live at 7.00 pm
Dr. Sam Yanuck, Director of the Functional Medicine Clinic Yanuck Center for Life and Health and CEO of Cogenceimmunology.com, an online immunology course.
"PANS/PANDAS: Mechanisms and Treatments"
Register at
https://us02web.zoom.us/webinar/register/WN_ikwZijHVTsGZmX3l_ZwfuA

Cancer series follow-up

Wednesday December 9th, 5.00 pm
Chris Woollams from CancerActive is answering questions that came in after his September presentation on **The Benefits of Complementary and Integrative Medicine in the Field of Oncology.**
To view go to:
https://www.youtube.com/watch?v=C9D5hylBgTY
Register at
https://us02web.zoom.us/webinar/register/WN_0nUKfP9wQTiyC3qMqFa77w

Klinghardt Institute

Autonomic Response Testing Level 3 online
1st December 2020 *A.R.T.3 Intermediate World-wide Online Programme*

Autonomic Response Testing Level 1 online
12th January 2021 *Klinghardt A.R.T.1 Beginners Worldwide Online Programme*

See www.klinghardtinstitute.com for further details and to register.

General Naturopathic Council

Presentation by Dr. Kiran Krishnan on The Mitochondria and the Microbiome
The latest in a series of webinars available to members of the GNC
https://gncouncil.co.uk/

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